

REMARKS

By this paper, claims 7, 12, 16 – 18, 22, 24, 26 – 33, 36, 41 and 42 have been cancelled without prejudice. Independent claims 12, 18 and 31 have been replaced by new claims 43 – 45, respectively. Thus, the pending independent claims and their depending claims are presented for reconsideration, as follows: independent claim 1 and dependent claims 2 – 5 and 8 – 11; independent claim 43 and dependent claims 13 - 15; independent claim 44 and dependent claims 19 - 21, 23 and 25 ; and independent claim 45 and dependent claims 34, 37 - 40.

In the Office Action, claim 7 was rejected under 35 U.S.C. § 112, 2nd par. Claim 7 has been cancelled without prejudice, thereby removing the ground for this rejection.

The Office Action also rejected each of the then pending independent claims (e.g., claims 1, 12, 18 and 31) as either anticipated (e.g. claims 18 and 31) under 35 U.S.C. § 102(e) by U. S. Pat. No. 6,511,317,B2 (Melikechi et al.)¹ or as obvious (e.g. claims 1 and 12) under 35 U.S.C. § 103(a) over Melikechi et al. in combination with U. S. Pat. No. 5,711,665 (Adam et al.).

As presented herein for reconsideration, claim 1 is directed to an optical device for focusing light emitted from a light-generating source of a dental instrument. The optical device comprises a lens having a first end that is substantially flat and a second end that is curved, wherein the substantially flat first end is configured for receiving light from the light-generating source, and wherein the curved second end is configured for focusing the light received by the first end. The optical device also comprises a “means for holding the first end of the lens adjacent to the light-generating source and for protecting the lens from contact,” and “wherein the means for holding and for protecting the lens comprise a transparent shield having means for removable attachment to the dental instrument so that it can be removed together with the lens and discarded after use.”

Similarly, new independent claim 43 (which replaces independent claim 12) defines “an improved optical device assembly” for use “in a dental curing apparatus comprised of a dental instrument having a main body for supplying electrical power, an extension arm attached at one end to said dental instrument, and through which electrical power is connectable to an LED light

¹ Nothing in these remarks should be construed as any admission that Melikechi et al. is a qualifying reference under section 102(e). Applicants reserve the right to challenge the “prior art” status of that reference at any time and accordingly any arguments or remarks regarding Melikechi et al. are made assuming *arguendo* that Melikechi et al. is a proper reference under the statute.

source." The improved optical device is comprised of "a disposable assembly that may be removed and discarded after use on a patient, comprising, a lens positioned so as to receive light from the LED light source, said lens having a curved end that focuses the received light into a desired focus of illumination suitable for curing dental compounds within a patient's mouth, and a transparent shield which fits over and protects the lens, and into which the lens fits and is held, with the transparent shield in turn comprising means for removable attachment to the extension arm."

New independent claim 45 (which replaces claim 31) defines a light curing apparatus comprised of "a dental instrument comprised of a main body for supplying electrical power, an extension arm attached at one end to said dental instrument, and through which the electrical power is connectable to an LED light source, and an optical device assembly connected to an opposite end of the extension arm." The optical device assembly comprises an LED light source connectable to the electrical power supplied from said main body of the dental instrument, and a disposable assembly that may be removed and discarded after use on a patient." The disposable assembly is, in turn, defined as including both "a lens positioned so as to receive light from the LED light source, said lens having a curved end that focuses the received light into a desired focus of illumination suitable for curing dental compounds within a patient's mouth, and a transparent shield which fits over and protects the lens, and into which the lens fits and is held, with the transparent shield in turn comprising a means for removable attachment to the extension arm."

New independent claim 44 (which replaces claim 18), is similar to claim 45 but differs in that, rather than the "disposable assembly" of claim 45, the optical assembly is defined as having a rigid, conically shaped disposable transparent shield which fits over and protects the lens, and comprising means for removable attachment to the extension arm so that the transparent shield may be removed and discarded after use on a patient." Thus, in claim 44, both the lens and the shield are disposable, whereas in claim 45 only the shield is disposable after use, and the shield has a rigid, conical shape, that makes the shield useful for inserting the tip of it into the patient's cavity, as discussed at page 15, par. [043].

The independent claims 1 and 43 – 45 as presented herein are not anticipated or made obvious by Melikechi et al. either singly or in combination with Adam et al.² or any other reference of record. Melikechi et al. discloses a curing device 10 (see Figs. 1 – 2) that includes a handle 12 connected by way of a flexible “gooseneck” type arm 16 to mounting head assembly 14 that contains (see Fig. 4A) an array of LEDs 72,74 focused through a lens 54 mounted inside of the head assembly. The handle 12 is connected (see Fig. 1) to a separate power supply 18 by way of cord 19. Melikechi et al. also discloses, at col. 18, lines 53 – 61, that

“The compactness of the device allows for a protective layer or sheath of various kinds to be placed covering the head and the arm between patients to prevent cross contamination. The protective sheath could be a cap that fits directly over the head or an elastic membrane that can be stretched over the device. In one embodiment, the lens itself could be a part of a molded piece that can be disposed after each patient.”

Unlike Melikechi et al., which does not disclose a lens that fits into and is separately held by a rigid shield, applicants’ claimed optical device assembly (claim 43) and apparatus (claim 45) define a “disposable assembly” that includes the lens and a transparent shield “which fits over and protects the lens, and into which the fits and is held” with the shield in turn comprising a “means for removable attachment to the extension arm” of the device. Claim 1 similarly defines an optical device with a “means for holding the first end of the lens adjacent” to the LED light source and “for protecting the lens from contact,” and wherein the means is in the form of a transparent shield having “means for removable attachment . . . so that it can be removed together with the lens and discarded after use.” Further, the apparatus of claim 44 is even further removed from Melikechi et al. because that claim defines the transparent shield of the optical device assembly as “a rigid, conically shaped disposable transparent shield which fits over and protects the lens,” with a “means for removable attachment to the extension are so that the transparent shield may be removed and discarded after use on a patient.”

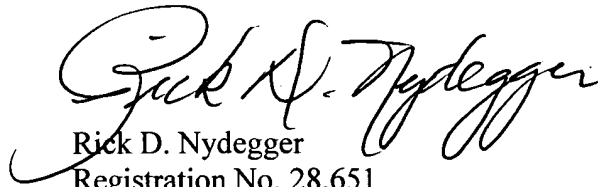
² Adam et al. was secondarily cited simply to show that use of a dome-shaped lens for use with an LED light source is known in the dental curing art. See, e.g., lens 46 (Fig. 9) used with the LED 48 to cure an adhesive compound 56 used to bond orthodontic brackets 20. As such, Adam et al. has no relevance to the independent claims presented for consideration, since they do not claim a dome-shaped lens in the first instance.

Accordingly, for at least the reasons noted, the independent claims presented herein, and the claims depending from those claims, is neither anticipated nor made obvious by the prior art of record. Therefore, favorable reconsideration and allowance is requested.

In the event that the Examiner finds any remaining impediment to allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 10th day of August, 2004.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Rick D. Nydegger", is written over the typed name and registration number.

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